

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
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141FM03				
GAS TRAP, ITEM 141 2/2 ----- SV784943-5 (1) OR SV805257-2 ----- (1)		Restricted flow, separator delivery orifice clogs.  Contamination in the coolant loop.	END ITEM: Air bubbles in the coolant loop will bypass the water separator delivery orifices and be entrained into the pump.  GFE INTERFACE: Possible loss of pump prime, resulting in a loss of coolant flow to the LCVG and to the sublimator.  MISSION: Terminate EVA. Loss of LCVG cooling during use.  CREW/VEHICLE: None.  TIME TO EFFECT /ACTIONS: Minutes.  TIME AVAILABLE: N/A  TIME REQUIRED: N/A  REDUNDANCY SCREENS: A-N/A B-N/A C-N/A	A. Design - P/Ns SV784943 and SV805257: The gas trap is equipped with a 20 micron plain dutch pleated screen to prevent contamination from leaving the gas trap and flowing downstream to the water pump.  There are seven 0.013" dia. orifices. Only one orifice is required to pass the required flow. The seven orifices flow into a single 0.016" +/- 0.001" series orifice. By design, the smaller dia. orifices act as a filter to the larger dia. orifice.  B. Test - Component Acceptance: P/Ns SV784943 and SV805257: A bubble pt. performance test is performed on the pleated screen by submerging the wetted item 0.35 - 0.65 inches below the surface of alcohol and measuring the inlet pressure at which point initial bubbling and 100% bubbling occurs. Initial bubbling shall occur at 8.5" H2O minimum. 100% bubbling shall occur at 12.0" H2O maximum. A screen pressure drop test is performed by supplying a flow of 260-280 lbs/hr at a temp. of 60-80 degree F. The pressure drop across the screen as a function of inlet H2O temperature must not exceed a specified amount, depending on temp, approx. .11 - .15 inches of H2O max. for P/N SV784943 and approx. .80 inches - .87 inches H2O max. for P/N SV805257.  A performance flow test is performed on the separator delivery orifice by supplying the orifice with a H2O flow at 10.8-11.2 psid, at 65-80 degree F for 5 minutes minimum. The orifice must flow 8.7 - 10.3 lbs/hr.  The item is performance tested by supplying the inlet with mixture of H2O and N2 at the rates of 195-205 lbs/hr H2O and 502-695 scc/min N2 at an inlet pressure of 10.8 - 10.9 psid. The item must completely separate the gas from the H2O i.e. gas flow out must be within 10% of 502-695 scc/min N2 and there must be no entrained gas in the water outlet.  The item is additionally performance tested as per above except the H2O/N2 mixture is 195-205 lbs/hr H2O and 502-695 scc/min with N2 at a pressure of 5.8-5.9 psid. Gas flow out must be within 10% of 502-695 scc/min N2 and there must be no entrained gas in the water outlet.  PDA: P/Ns SV784943 and SV805257: The gas trap is not directly tested at PDA. The item 123 motor/fan system is tested for pressure drop. Restricted flow in the gas trap can be detected at this test.  Certification: Certified for a useful life of 112 hours (ref. EMUM-583).  P/N SV805257 Certified for a useful life of 188 hours (ref. EMUM-680).  C. Inspection - P/Ns SV784943 and SV805257: The screen and orifice are visually inspected for cleanliness at visual

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EXTRAVEHICULAR MOBILITY UNIT  
SYSTEMS SAFETY REVIEW PANEL REVIEW  
FOR THE  
I-141 GAS TRAP  
CRITICAL ITEM LIST (CIL)

EMU CONTRACT NO. NAS 9-97150

Prepared by: *J. Alaman, Jr. 3/27/02*  
HS - Project Engineering

Approved by: *RMB 4/3/02*  
NASA - ~~SSA~~/SSM  
25

*M. Snyder*  
HS - Reliability

*W. E. [Signature]*  
NASA - EMI/SSM

*Alan Poyner for Rose*  
HS - Engineering Manager

*[Signature]*  
NASA - S & MA

*James J. [Signature] 10-15-02*  
NASA - MOD

*Reid [Signature] 10-22-02*  
NASA - Crew

*[Signature] 10/24/02*  
NASA - Program Manager